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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/587,583

07/28/2006

Jonathan Hughes

WW/3-22352/A/PCT

9687

324 7590 06/25/2008

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EXAMINER

ARIANI, KADE

ART UNIT

PAPER NUMBER

1651

MAIL DATE

DELIVERY MODE

06/25/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/587,583	<b>Applicant(s)</b> HUGHES ET AL.	
	<b>Examiner</b> KADE ARIANI	<b>Art Unit</b> 1651	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 February 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### ***DETAILED ACTION***

The amendment filed on February 19, 2008, has been received and entered.

Claims 1-22 are pending in this application and were examined on their merits.

### ***Double Patenting Rejections***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to

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be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-22 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 9, and 12-20 of Hughes (US application No. 10/523302). Although the conflicting claims are not identical, they are not patentably distinct from each other because;

Claims 1, and 9- 20 of Hughes are drawn to a process comprising the steps of forming a fermentation product at a temperature of at least 50°C ((i) to (ii)), and subjecting the mixture to one or more separation stage, separating the fermentation product from the broth by employing one or more flocculation agents ((ii) and (viii)), introducing cationic and anionic polymers into the mixture (claim 17), swellable clays and silica based materials (claim 13), solid by-product is lignin and analogous material (claim 19), and fermentation product is ethanol, glycerol, and amino acids (claim 20).

Thus, it would have been obvious to one of ordinary skilled in the art at the time the invention was made to use the process disclosed by of Hughes to provide a process of separating suspended solids from a fermentation liquor by subjecting the liquor to a solids-liquid separation stage.

Applicant's arguments filed on 2/19/2008 have been fully considered but they are not persuasive.

Applicant argues that Hughes (10/523302) claims are directed to the separation of a polysaccharide acid hydrolysis product from a solid residue, these contrasts with the present method claims which are directed to the separation of suspended solids in fermentation liquor, and the present method claims do not overlap.

However, claims 1-22 are drawn to a process of separating suspended solids from a fermentation liquor by subjecting the liquor to a solids-liquid separation stage, wherein the fermentation liquor is produced in a fermentation process for the production of a fermentation product, in which the liquor has been subjected to a temperature of at least 50°C, wherein the solid-liquid separation stage is assigned by a treatment system, the treatment system comprises an anionic polymer, the treatment system further comprises addition of a cationic polymers, and the treatment system further comprises addition of a siliceous material.

As mentioned immediately above, claims 1, 9 - 20 of Hughes teaches the process.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Verser et al. (US Patent No. 6,927,048) in view of Coffey et al. (US 2003/0155091 A1), and further in view of Savage (US Patent No. 5,552,316).

Claims 1-22 are to a process of separating suspended solids from a fermentation liquor by subjecting the liquor to a solids-liquid separation stage, wherein the fermentation liquor is produced in a fermentation process for the production of a fermentation product, in which the liquor has been subjected to a temperature of at least 50°C, wherein the solid-liquid separation stage is assigned by a treatment system, the treatment system comprises an anionic polymer, the treatment system further comprises addition of a cationic polymers, and the treatment system further comprises addition of a siliceous material.

Verser et al. teach a fermentation liquor (broth) produced in a fermentation process for the production of a fermentation product (ethanol and acetic acid), in which the liquor has been subjected to distillation (column 3 lines 38- 66, column 15 line 1-4, 27-29, and 64-67, column 16 lines 7-16).

Verser et al. further teach the ethanol is removed from the water stream which is discharged from the column and separated by a simple liquid-solid separation into the solid base for recycle (column 16 lines 6-16, 22-30).

Verser et al. do not teach the treatment system comprises an anionic polymer, the treatment system further comprises addition of a cationic polymers, and the treatment system further comprises addition of a siliceous material. However, Coffey et al. teach subjecting a liquid to a solid-liquid separation stage, the treatment system comprising polymers derived from cationic and anionic monomers, siliceous material, bentonite, and use of such polymers for displacing unwanted soluble or colloidal materials from an aqueous cellulosic suspension as well as to increase the efficiency of the dewatering, Coffey et al. also teach mechanical dewatering (press dewatering) (see Abstract, 0002, 0006, 0022-0029, 0030, 0031, 0075-0078, and 0108).

Moreover, Savage teaches a process of separating suspended solids (solid liquid separation) from a fermentation liquor by subjecting the liquor to treatment system comprising cationic and anionic polymers (flocculants) to clarify the fermentation liquor, acrylic acid, maleic acid (see Abstract, column 2, lines 52-67, and column 3, lines 6-9). Savage teaches synthetic polymer with an anionic monomer content of at least 50 wt% (about 5 to 95 mole %) (Column 2, lines 24).

Verser et al. teach the net effect of the reactive distillation process is to recover the acetic acid from the dilute salt solution thereby producing a relatively concentrated product stream, and without vaporizing the water that forms the bulk of the stream. The integration of reduces the energy requirement, and simultaneous removal of the product shifts the esterification equilibrium and leads to higher conversion in a short time (column 16. lines 26-34).

Therefore, one of ordinary skill in the art would have been motivated to apply the solid-liquid separation system as taught by Coffey et al. and Savage in the process of Verser et al. in order to provide a process of separating suspended solids from fermentation liquor by subjecting the fermentation liquor to a solid-liquid separation stage. As taught by Verser et al. and Coffey et al., the motivation would be to improve the efficiency of the dewatering, and increase the efficiency of the process by lowering the cost and energy. The claims would have been obvious because applying a particular known technique was recognized as a part of the ordinary capabilities of one skilled in the art.

Applicant's arguments filed on 02/19/2008 have been fully considered but they are not persuasive.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references.

Applicant argues that the anionic monomer content of the flocculant of Coffey is about 0.1 to 9.9 mole %. The present synthetic polymer with an anionic monomer content of at least 50 wt%, is far outside the anionic monomer content of Coffey. However, Savage teaches synthetic polymer with an anionic monomer content of at least 50 wt%, and adding anionic polymers followed by the cationic polymers give superior settling of microorganisms at lower concentrations of the cationic polymer and give improved clarity.



***Conclusion***

No claims are allowed.

**THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kade Ariani whose telephone number is (571) 272-6083. The examiner can normally be reached on 9:00 am to 5:30 pm EST Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn can be reached on (571) 272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon B Lankford Jr/  
Primary Examiner, Art Unit 1651

Kade Ariani  
Examiner  
Art Unit 1651